objectivity to solve the above-mentioned tasks, when printing output data that become the output objects, by selectively using information on the copyright managed by a copyright management device or copyright data

5   attached to the corresponding output data to execute a print processing of the corresponding output data.

Other objects and features of the present invention will become more apparent upon a reading the following specification and drawings.

10

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram illustrating a configuration of an information processing system in which the present invention finds application.

15   FIG. 2 is a block diagram illustrating a hardware configuration of a host computer in said information processing system.

FIG. 3 is a block diagram illustrating a hardware configuration of a printer in said information

20   processing system.

FIG. 4 is a block diagram illustrating a hardware configuration of a digital copying machine in said information processing system.

FIG. 5 is a block diagram illustrating a software

25   configuration of a host computer in said information processing system.

FIG. 6 is a block diagram illustrating a software

configuration of a printer in said information

processing system.

FIG. 7 is a block diagram illustrating a software

configuration of a digital copying machine in said

5   information processing system.

FIG. 8 is a diagram explaining an example of a

print data format in said information processing

system.

FIG. 9 is a diagram explaining another example of

10   copyright data being included in said print data.

FIG. 10 is a block diagram illustrating main

functions of said host computer for executing a print

processing of said print data.

FIG. 11 is a flowchart for explaining an operation

15   of said host computer.

FIG. 12 is a diagram for explaining an example of

a dialogue for inquiring compensation of a user in the

operation of said host computer.

FIG. 13 is a diagram for explaining an example of

20   a charge table for use in a charge process.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Hereinafter, an embodiment of the present

invention will be explained by use of the drawings.

25   (A whole configuration of the present embodiment)

The present invention finds application, for example,

in an information processing system 100 shown in FIG.

1. In the information processing system 100, as shown in the above-mentioned FIG. 1, is given the configuration in which a host computer (WS 1) 111, a host computer (WS 2) 112, a printer (PT 1) 113, a

5   printer (PT 2) 114, a digital copying machine (1) 115, and a digital copying machine (2) 116 are connected via an local network 117 (hereinafter, also referred to as a network 117 for simplicity) so that each thereof can communicate with the other.

10   In addition, in the above-mentioned FIG. 1, for simple explanation, the configuration is given in which each two of the host computers, the printers, the digital copying machines are adapted to connect over the network 117 respectively, however the connection

15   number is not limited thereto.

As with physical specifications and access procedures of the network 117, for example, in addition to a token bus method specified in "IEEE 802.4", a "STAR Network" having a physical topology with a star

20   shape specified in "IEEE 802.3 10 BASE 5" or a token ring method specified in "IEEE802.5" are applicable.

Also, as with a network operation system that causes the network 117 to function, for example, "Net Ware V3.1" (manufactured by Nobel) for use in a MS-DOS

25   operating system, a MAC and so forth, or "Network Lan Manager V2. 11" for use in IBM-manufactured computers and so forth, and so forth are applicable.

(A hardware configuration of the host computers 111 and 112)

Each of the host computer (WS1) 111 and the host computer (WS2) 112 is configured similarly, and for example, as shown in FIG. 2, the host computer 111 includes a CPU 221 for governing the host computer in its entirety, a cache memory 222 that is a fast-access memory for storing various kinds of data, application software programs and so forth, a magnetic disk memory 227 that is employed as a large scale memory for use mainly in the application software programs, a keyboard 224and a mouse 225 for inputting data, commands and so forth of text editor, program development and so forth, a reset unit 226 for initializing the CPU 221, the application software programs and so forth, an input controller 223 for controlling the input from the keyboard 224, the mouse 225 and the reset unit 226, a CRT 229 for displaying, a display controller 228 for controlling the display on the CRT 229, and a communication controller 230 for carrying out the connection to the network 117.

And, each of the CPU 221, the cache memory 222, the input controller 223, the magnetic disk memory 227, the display controller 228 and the communication controller 230 is connected to the other via a data bus 231 so that each thereof can transmit/receive the data to/from the other.

In the host computer 111 (112) described above, at first, the CPU 221 controls the operations of the host computer in its entirety via the data bus 231 by directly accessing the cache memory 222, the magnetic

5   disk memory 227, the CRT 229 and so forth, or by accessing them via their controller.

The controller 223 supplies to the CPU 221 the signals that are based on the operations by a user in the mouse 225 for executing selection of an icon on the

10   display screen of the CRT 229 that serves as display means, the keyboard 224 for inputting data, commands and so forth, the reset button 233, and so forth.

Herein, for example, when a main power source is switch on in the host computer 111, or when a reset

15   button 233 attached to the main frame of the host computer 111 is pressed down, the reset unit 226 is adapted to generate the signals (reset signals) for initializing the CPU 221, the application software being executed in the CPU, and so forth to supply them

20   to the input controller 223.

Accordingly, it enables initialization of the CPU 221, the application software being executed in the CPU 221, and so forth to be carried out that the input controller 223 supplies the corresponding reset signals

25   to the CPU 221.

In addition, the reset button 233, as shown in the above-mentioned FIG. 2, may be mounted as a separate

button, or may be adapted to share an optional switch out of a group of switches in the keyboard 224, for example, a STOP key or a main reset button of the host computer.

5   The display controller 228 develops the display data supplied from the CPU 221 into the data (pixel data) that are possible to display on the CRT 229 to generate the video data.

Accordingly, in the CRT 229, the image data based
10   on the video data generated in the display controller 228 are to be displayed.

The communication 230 receives/transmits the data via a interface 232 from/to each of the appliances (the printers 113 and 114, the digital coping machines 115
15   and 116, and so forth) connected over the network 117 under control of the network operating system causing the above-subscribed network 117 to function.

In addition, even though the configurations of the host computer (WS1) 111 and the host computer (WS2) 112
20   are the same definitely, if addresses thereof are different over the network 117, it is possible to simultaneously operate these two host computers 111 and 112.

(A hardware configuration of the printers 113 and
25   114)

Each of the printer (PT1) 113 and the printer (PT2) 114 are configured similarly and, for example, as

shown in FIG. 3, the printer 1113 comprises a main

controller 241 for governing the printer in its

entirety, a print processing controller 245 for

controlling electrostatic copying processing utilizing

5   a laser light, a communication controller 250 for

receiving the print data via the network 117, a file

memory 247 for temporarily storing the print data

received from the communication controller 250, a font

memory 242 for developing the print data within the

10   file memory 247 into the printable data, a keyboard 244

for inputting various kinds of data and commands and so

forth, a reset unit 246 for initializing the main

controller 241, the application software and so forth,

an input controller 243 for controlling the input from

15   the keyboard 244 and the reset unit 246, a liquid

crystal indicator 249 for displaying, and a display

controller 248 for controlling the display in the

liquid crystal indicator 249.

And, each of the main controller 241, the print

20   processing controller 245,the font memory 242, the

input controller 243, the file memory 247, the display

controller 248, and the communication controller 250 is

connected to the other via the data bus 251 so that

each thereof can receive/transmit the data from/to the

25   other.

In the printer 113 (114) as described above, at

first, the main controller 241 is configured to include

the CPU, the program memory, the data memory and so forth, and governs the operation control of the printer in its entirety by this configuration.

For example, the main controller 241 receives via the network interface 252 and the communication controller 250 the print data sent from the host computer 111 or 112 via the network 117 and executes data processing such as development of the corresponding print data according to a page description language (PDL) and so forth to carry out the printer control for the printing operation together with the processing control (the control of the print processing controller 245) for printing on the papers the data obtained in the corresponding data processing.

The input controller 243 supplies to the main controller 241 the signals based on the operation by the user in the keyboard 244 or the mouse (not shown) and so forth for inputting the data, the commands and so forth such as execution of the print processing (print execution), retrieval of the file executing the print process, or the interface initial set of the edit or the printer, or so forth.

Herein, for example, when the main power source is switch on in the printer 113, or when the reset button 253 attached to the main frame of the printer 113 is pressed down, the reset unit 246 is adapted to generate the signals (reset signals) for initializing the main

controller 241, the application software being executed in the CPU of the main controller 241, and so forth to supply them to the input controller 243.

Accordingly, it enables initialization of the main controller 241, the application software being executed in the CPU of the main controller 241, and so forth to be carried out that the input controller 243 supplies the corresponding reset signals to the main controller 241.

In addition, the reset button 253, as shown in the above-mentioned FIG. 3, may be adapted to be mounted as a separate button, or may be adapted to share an optional switch out of a group of switches in the keyboard 224, for example, a STOP key or a main reset button of the host computer.

The display controller 248 displays the data from the main controller 241 by the crystal liquid indicator 249.

For example, the controller 248 displays by the crystal liquid indicator 249 the data and the commands that are input from the keyboard 244, or the status of the printer 113, which are supplied from the main controller 241.

The communication controller 250 receives/transmits the data via the interface 252 from/to each of the appliances (the host computers 111 and 112, and so forth) connected over the network 117

under control of the network operating system causing the above-described network 117 to function.

In addition, even though the configurations of the printer (PT1) 113 and the printer (PT2) 114 are the same definitely, if addresses thereof are different over the network 117, it is possible to simultaneously operate these two printers 113 and 114.

(A hardware configuration of the digital copying machines 115 and 116)

Each of the digital copying machine (1) 115 and the digital copying machine (2) 116 comprises the copying machine function and the printer function as shown in the above-mentioned FIG. 3 respectively.

For this reason, the digital copying machine 115 is configured to comprises, for example, as shown in FIG. 4, configuration units 261 to 273 that function in a similar way to the configuration units 241 to 253 shown in the above-mentioned FIG. 3 and to simultaneously comprise an image reader controller 283, a document feeder controller 284, a sorter controller 285 and an interface 286.

In case that the digital copying machine 115 (116) as described above is employed as the copying machine, upon manuscripts being set at an automatic manuscript transfer unit (not shown) mounted on a manuscript desk and upon a print button on the keyboard 264 being pressed down, the digital copying machine 115 (116)

commences the following copying operations according to the preset copying processing procedure.

At first, the document feeder controller 284 executes the control for transferring the manuscripts on said automatic manuscript transfer unit to an image reader (image reading unit, not shown).

Next, the image reader controller 283 temporarily stores as the image data into the file memory 267 the information of the manuscripts transferred to said image reader by the control of the document feeder controller 284 and executes the control for supplying the corresponding image data to the print processing controller 265 for controlling the electrostatic copying processing utilizing a laser light.

Accordingly, by the print processing controller 265,the image based on the corresponding to the image data is to be transcribed and formed on the papers.

Next, the sorter controller 285 executes the control for delivering from a sorter (not shown) the papers (transcript papers) on which the image is transcribed and formed by the print processing controller 265.

Also, upon finishing the volumes set by the keyboard 264 in the foregoing copying operation (completion of copying), the sorter controller 285 executes the post-processing control such as a staple (a Hotchkiss clamping process) set by the keyboard 264

and so forth.

On the other hand, in case that the digital copying machine 115 (116) is employed as the printer, the digital copying machine 115 (116) functions in a

5   similar way to the operation described by use of FIG. 3 in the above-mentioned (a hardware configuration of the printers 113 and 114).

Namely, the main controller 261 executes the control for receiving the print data from the network

10   117 by the communication controller 270, for temporarily storing the corresponding data into the file memory 267 and for developing the print data within the file memory 267 into the printable data in the font memory 262.

15   The sorter controller 285 executes the control for delivering from the sorter (not shown) the papers printed by the above-mentioned control in the main controller 261.

Also, upon finishing the volumes set by the

20   keyboard 264 or the host computers 111 and 112 in the above-mentioned copying operation (completion of copying), the sorter controller 285 executes the post-processing control such as the staple set by the keyboard 264 or the host computers 111 and 112, and so

25   forth.

As described above, in order to realize the printer function as well together with the copying

function in the digital copying machine 115 (116), in case that the digital copying machine 115 (116) is functioning as the printer, the main controller 261 receives via the network interface 272 and the

5   communication controller 270 the print data sent from the host computers 111 or 112 via the network 117, executes data processing such as development of the corresponding print data responding to the page description language (PDL) and so forth, and executes

10   the printer control for the printing operation (sorting of the papers, and the control including the post process) together with the processing control (the control of the print processing controller 265) for printing on the papers the data obtained by the

15   corresponding data processing.

     Also, in case that the digital copying machine 115 (116) is functioning as the copying machine, the main controller 261 controls the automatic transcript transfer unit (not shown) by the document feeder

20   controller 284, simultaneously reads out the image data of the transcript in the said automatic transcript transfer unit by the image reader controller 283, and executes the processing control for the print processing while executing image processing such as

25   graduation processing of the corresponding image data and so forth, and the printer control for the printing operation (sorting of the papers, and the control

including the post process).

Also, from the keyboard 264, the commands are input indicating either that the digital copying machine 115 (116) is caused to function as the printer (printer mode) or that the digital copying machine 115 (116) is caused to function as the copying machine (copying machine mode). The input controller 263 supplies to the main controller 261 the commands input from the keyboard 264. Thereby, the main controller 261 switches each operation in the copying machine function and in the printer function as described above based on the command modes from the input controller 263.

Also, the keyboard 264 includes the function in which the data and the commands are possible to input such as retrieve and edit of the files, or the interface initial set of the digital copying machine 115 (116), or so forth when in the printer mode, and the function in which the commands and the data are possible to input that indicate the number of copying sheets, switching of single side/two sides, switching of expansion/reduction, a copying concentration set, a sorting mode set, with or without executing of the staple, copying commencement and so forth when in the copying machine mode.

In addition, the mouse (not shown) and so forth might be adapted to carry out the various inputting

operations in the keyboard 264. Also, even though the
configurations of the digital copying machine (1) 115
and the digital copying machine (2) 116 are the same
definitely, if addresses over the network 117 are

5   different, it is possible to simultaneously operate
these digital copying machines 115 and 116.

(A software configuration of the host computers
111 and 112)

Each of the host computer (WS1) 111 and the host

10   computer (WS2) 112, for example, includes the software
configuration as shown in FIG. 5.

The operating system and the various kinds of
application software shown in the above-mentioned FIG.
5 are stored into the magnetic disk memory 227 that

15   serves as a large-scale memory shown in the above-
mentioned FIG. 2.

Specifically, as shown in the above-mentioned FIG.
5, software 300 includes an operating system 301, a
network operating system 302, the various kinds of

20   application software, and a driver software group 303
to 308.

The operating system 301 executes the hardware-
manner control of the host computer 111 (112) and
switches execution of the application software 308.

25   The network operating system 302 is for executing
the hardware-manner control of the network 117, which
also becomes a nucleus of the communication control.

For example, the network operating system 302 receives/sends the data based on theoretical network addresses over the network 117. Also, the network operating system 302 absorbs the packet data addressed to itself (addressed to the host computer 111 (112)) over the network 117.

In the software group 303 to 308, network driver software 303 executes the control for exchanging the data, the messages and so forth among the application software of the various appliances connected over the network 117 (the control for a network connection 309).

A file share link protocol 304 builds the data (the application software 308, the printer driver software 310 and so forth) obtained via the network driver software 303 into the real machine (the host computer 111 (112)) and assigns virtual drives necessary for the corresponding data (the application software 308 and so forth).

A printer manager 305 manages the status (printer status) information 312 (1), 312 (2), ..., 312(n) such as the printer status, the function, the additional function, a name of the model and so forth in the printers 113 and 114 or in the digital copying machines 115 and 116 connected over the network 117. Also, the printer manager 305 drives the predetermined printer in some cases and drives printer drivers 310 (1), 310 (2), ..., 310(n) for developing the PDL data for the

determined printer in the other cases. In addition, the printer driver 310 includes a print function information acquisition unit 701 of FIG. 10 to be described later, and a user sets the printing

5 conditions of the print data 600 in advance based on the function information of the printer 113 being controlled by the print function information acquisition unit 701.

Further, the printer manager 305 manages a print

10 file 311 including the print data that are to be printed.

The processing result and the status information by the printer manager 305 are displayed (313) on the CRT 229 via a GUI (Graphical User Interface) 307.

15 A reader manager 306 manages the status information such as the status, the function, the additional function, the model name of the reader and so forth in the digital copying machines 115 and 116 over the network 117.

20 Also, the reader manager 306 drives each of the readers in some cases, and drives the reader driver software for loading the image data into each of the readers in the other cases.

Also, the reader manager 306 manages the files

25 including the image data that are to be memorized.

The processing result and the status information by the reader manager 306 are displayed (313) on the

CRT 229 via the GUI 307 in a similar manner to the

processing result and the status information by the

printer manager 305.

(A software configuration of the printers 113 and

5   114)

Each of the printer (PT1) 113 and the printer

(PT2) 114, for example, includes the software as shown

in FIG. 6.

The operating system and the various kinds of

10   application software shown in the above-mentioned FIG.

6 are stored into the memory within the main controller

241 shown in the above-mentioned FIG. 3.

Specifically, as shown in the above-mentioned FIG.

6, software 400 includes an operating system 401, a

15   network operating system 402, the various kinds of

application software, and a driver software group 403

to 408 in a similar manner to the software

configuration of the host computer 111 (112) shown in

the above-mentioned FIG. 5.

20   The operating system 401 carries out the hardware-

manner control of the printer 113 (114) and switches

execution of the application software 408.

The network operating system 402 is for executing

the hardware-manner control of the network 117, which

25   also becomes a nucleus of the communication control.

For example, the network operating system 402

receives/sends the data based on theoretical network

addresses over the network 117. Also, the network operating system 402 absorbs the packet data addressed to itself (addressed to the printer 113 (114)) over the network 117.

5   In the software group 403 to 408, the network driver software 403 executes the control for exchanging the data, the messages and so forth among the application software of the various appliances connected over the network 117 (the control for a

10   network connection 409).

A file share link protocol 404 builds the data (the application software 408, the printer driver software and so forth) obtained via the network driver software 403 into the real machine (the printer 113

15   (114)) in some cases, and assigns the virtual drives necessary for the corresponding data (the application software 408 and so forth) in other cases.

A printer manager 405 returns the status information such as the status, the function, the

20   additional function, the model name of the printer 113 (114) responding to the request by the host computers 111 and 112 connected over the network 117, the other terminals (terminals on a client side) and so forth and sends the corresponding status information at a

25   predetermined timing to the host computers 111 and 112 connected over the network 117 and the other terminals (terminals on a client side) and so forth in the other

cases.

Also, the printer manager 405 stores as the file
411 into the file memory 247 the print data from the
host computers 111 and 112 connected over the network
5   117 and the other terminals (terminals on a client
side) and so forth in some cases, and controls
emulation software 410 for converting the corresponding
print data into the printable data, and the printer
driver software for developing the PDL data for the
10   various printers in the other case.

A printer process 406 executes the control for
printing in a print unit 412 the print data within the
file 411 that are to be printed, which are stored by
the printer manager 405.

15   The processing result and the status information
by the printer process 406 are displayed (413) on the
liquid crystal indicator 249 via the GUI 407.

(A software configuration of the digital copying
machines 115 and 116)

20   Each of the digital copying machine (1) 115 and
the digital copying machine (2) 116, for example,
includes the software as shown in FIG. 7.

The operating system and the various kinds of
application software shown in the above-mentioned FIG.
25   7 are stored into the memory within the main controller
261 shown in the above-mentioned FIG. 4.

Specifically, as shown in the above-mentioned FIG.

7, software 500 includes an operating system 501, a network operating system 502, various kinds of application software, and a driver software group 503 to 511 in a similar manner to the software

5   configuration of the host computer 111 (112) shown in the above-mentioned FIG. 5.

The operating system 501 executes the hardware-manner control of the digital copying machine 115 (116) and switches execution of the application software 511.

10   The network operating system 502 is for executing the hardware-manner control of the network 117, which also becomes a nucleus of the communication control. For example, the network operating system 502 receives/sends the data based on theoretical network

15   addresses over the network 117. Also, the network operating system 502 absorbs the packet data addressed to itself (addressed to the digital copying machine 115 (116)) over the network 117.

In the software group 503 to 511, network driver

20   software 503 executes the control for exchanging the data, the messages and so forth among the application software of the various appliances connected over the network 117 (the control for a network connection 512).

A file share link protocol 504 builds the data

25   (the application software 511, the printer driver software and so forth) obtained via the network driver software 503 on the real machine (the digital copying

machine 115 (116)) and assigns the virtual drives

necessary for the corresponding data (the application

software and so forth).

A printer manager 505 returns the information such

5   as the status, the function, the additional function,

the model name of the digital copying machine 115 (116)

responding to the request by the host computers 111 and

112 connected over the network 117, the other terminals

(terminals on a client side) and so forth, and sends

10   the corresponding status information at a predetermined

timing to the host computers 111 and 112 connected over

the network 117 and the other terminals (terminals on a

client side) and so forth.

Also, the printer manager 505 stores as the file

15   514 into the file memory 267 the print data from the

host computers 111 and 112 connected over the network

117 and the other terminals (terminals on a client

side) and so forth, and controls emulation software 513

for converting the corresponding print data into the

20   printable data, and the printer driver software for

developing the PDL data for the various printers.

A printer process 506 executes the control for

printing in a print unit 515 the print data that are to

be printed in the file 514 which are stored by the

25   printer manager 505.

The processing result and the status information

by the printer process 506 are displayed (516) on the

liquid crystal indicator 269 via the GUI 507.

An image reader manager 508 controls the document feeder (the document feeder controller 284) by an accessory controller 510 and executes the control for reading out the information (image data) of the transcripts transferred from the corresponding document feeder.

Also, the image reader manager 508 executes nose elimination processing by the image processing unit 509 of the above-mentioned data to prepare the print data (image reader files).

Also, the image reader manager 508 executes the control for directly printing the print data (image data) on the papers by the print unit 515 and for preparing the predetermined volumes of the print matters sorted in the sorter and so forth based on the set form from the user by the keyboard 264 of the digital copying machine 115 (116) and so forth.

(An operation of the information processing system 100)

Herein, the operation of the information processing system 100 will be explained at the time of the print processing of the print data including the copyright data.

FIG. 8 illustrates an example of the print data 600 that become the print objects in the host computer 111 (112).

As shown in the above-mentioned FIG. 8, the print data 600 in accordance with the present embodiment has the copyright data 610 of the corresponding image data attached to the actual data 620 (object data, herein referred to the image data) to be printed.

In addition, the image data 620 that become the print objects might be, for example, the font data, the pattern data and so forth.

A domain of copyright data 610, specially, includes a domain (copyright owner name domain) 611 in which the information of the name of the copyright owner having the copyright of the image data has been set, a domain (URL domain) 612 in which the URL information has been set designating location sites of the information on the copyright over the network 117 or location sites of an acquisition method of the information on the copyright, a printing conditions domain 613 in which the printing conditions of the image data 620 have been set, and a data ID 614 assigned for the copyright owner to be able to specify the image data 620. Also, in a date domain 615, the final updated date or the effective limit date of the copyright data 610 have been set.

In the copyright owner name domain 611, is set the information of the copyright owner name having the copyright of the image data 620.

In the printing conditions domain 613, is set the

information on the printing conditions of the image

data 620 such as a "flag as to whether or not DO NOT

PRINT", a "printable resolution range", a "printing

restriction number", "print compensation information"

5   and so forth.

In addition, as with the form by which the

information is set to the printing conditions domain

613, it is not limited to the array expression as shown

in the above-mentioned FIG. 8, and for example, may be

10   the language form shown in the above-mentioned FIG. 9.

FIG. 10 illustrates the function configuration

that the most characterizes the host computer 111 (112)

executing the print processing of the print data 600 to

which the copyright data 610 have been attached, as

15   shown in the above-mentioned FIG. 8.

The host computer 111 (112) comprises a copyright

information acquisition unit 702 for reading out the

copyright data 610 from the print data 600, a print

function information acquisition unit 701 for obtaining

20   the function information (the printing set information

and so forth) of the appliance (Herein, it is to be the

printer 113 over the network 117 as one example.) for

use in the print processing of the image data 620 being

included in the print data 600, and a print processing

25   unit 703 for determining the printing method based on

the copyright data 610 obtained in the copyright

information acquisition unit 702 and on the function

information obtained in the print function information acquisition unit 701, and for executing the print processing of the image data 620 by the printer 113 over the network 117 based on the corresponding

5   printing method.

Furthermore, over the network 117 is connected a copyright management device 704 for managing the information on the copyright of the print data 600. The copyright management device 704 comprises a data ID

10   management unit 705 and a copyright information storage unit 706. Also, the host computer 111 is adapted to be able to connect to the copyright management device 704 by the theoretical addresses being designated in URL information 612 that are listed within the copyright

15   data 610.

These copyright information acquisition unit 702, the printing function information acquisition unit 701, and the print processing unit 703 are the function configuration units that operate by causing the CPU 221

20   shown in the above-mentioned FIG. 2 to start the operating system shown in the above-mentioned FIG. 5 and the various kinds of application software.

Similarly, as with the copyright management device 704, it is configured in a similar manner to the host

25   computers 111 and 112 as shown in FIG. 5, and the data ID management unit 705 and the copyright information storage unit 706 are the function configuration units

that operate by causing the CPU 221 shown in the above-mentioned FIG. 2. to start the operating system 301 shown in the above-mentioned FIG. 5 and the various kinds of application software.

5　　　FIG. 11 illustrates the operation of the host computer 111 (112) in case that by the configuration shown in above-mentioned FIG. 10, the host computer 111 (112) prints and outputs the print data 600 including the copyright data 610 by the printer 113 connected over the network 117.

In addition, as with the operation according to the flowchart of the above-mentioned FIG. 11 to be described hereinafter, it may be executed by causing the CPU 221 to start the operating system 301 or the application software 308.

Step S701:

The printer driver 310 separates the print data 600 into the copyright data 610 (Refer to the above-mentioned FIG. 8) and the image data 620 to determine whether or not the copyright data 610 have been included in the print data 600.

By this determination, in case that the copyright data 610 have not been included in the print data 600, the process then flows to step S702.

Also, by this determination, in case that the copyright data 610 has been included in the print data 600, the process then flows to step S703.

Step S702:

The printer driver 310 sends the image data 620 to the print processing unit 703 and prints the object print data 600 on the papers by the normal print output operation to finish the present process.

Step S703:

The printer driver 310 sends the copyright data 610 to the copyright information acquisition unit 702.

The copyright information acquisition unit 702 obtains the information within the date domain 615 of the copyright data 610 to determine whether or not updating of the copyright data 610 is necessary. For example, in case that the final updated day has been stored in the date domain 615, if the present date is within the predetermined period from the final updated data, it is determined that updating is not necessary, and if the present date is out of the predetermined period, it is determined that updating is necessary. Also, for example, in case that the effective limit date is stored in the date domain 615, if the present date is before the effective limit date, it is determined that updating is not necessary, and if the present date is after the effective limit date, it is determined that updating is necessary.

By this determination, if it is determined that updating is necessary, the process then flows to step S704. Also, by this determination, if it is determined

that updating is not necessary, step S704 and step S705 are skipped to execute the process following step S706 using the current copyright data 610 as they are.

Step S704:

5 The copyright information acquisition unit 702 determines whether or not the URL information has been set to the URL domain 612 of the copyright data 610.

By this determination, in case that the URL information has been set to the URL domain 612, the

10 process then flows to step S705.

Also, by this the determination, in case that the URL information has not been set to the URL domain 612, the next step S705 is skipped to execute the process following step S706 using the current copyright data

15 610 as they are.

Step S705:

The host computer 111 accesses the URL that has been set to the URL domain 612 by the network operating system 302 to connect to the copyright management

20 device 704. And, it obtains the latest copyright information of the print data 600 from the copyright information storage unit 706, and updates the copyright data 610 by the obtained latest copyright information. Specifically, the copyright information acquisition

25 unit 702 in FIG. 10 sends the copyright owner name 611 and the data ID 614 to the copyright management device 704 over the network 117. On the other hand, upon the

copyright management device 704 receiving the copyright

owner name 611 and the data ID 614, the data ID

management unit 705 obtains the latest copyright

information of the print data 600 that corresponds to

5   the corresponding data ID stored in the copyright

information storage unit 706 to send it to the

copyright information acquisition 702. The received

latest copyright information is notified as the updated

information to the application software 308 via the

10   operating system 301, and the application software 308

overwrites the updated information on the copyright

data 610 within the print data 600. Normally, the

application software 308 loads the document into the

cache memory 222 and the magnetic disk memory 227, and

15   in case that the document has been altered, it notifies

the user as to whether the updated document is saved,

however, in this case, it only overwrites the updated

information of the copyright data 610 and does not

inquire the user of confirmation on the alteration.

20   In addition, in case that acquisition of the

latest copyright information is a failure in the

present S705, in process steps following the step S706,

the information of the current copyright data 610 is to

be employed.

25   Step S706:

The copyright information acquisition unit 702

obtains the information within the printing conditions

domain 613 of the copyright data 610, and

simultaneously obtains the printing set information

(Herein, the printing set information in the printer

113) set by the user from the printer driver 310.

5   Step S707:

The copyright information acquisition unit 702

compares the printing conditions being indicated by the

information within the printing conditions domain 613

of the copyright data 610 with the printing set

10   information set by the user, by this comparison, to

determine whether or not the normal printing is

possible.

Specifically, for example, in case that the "flag

as to whether or not DO NOT PRINT" is the flag that the

15   printing is OK, the "printable resolution range"

matches the printable resolution conditions of the

printer 113 being managed by the printer manager 305,

no setting to the "printing restriction number" is

present (= no printing restriction) and no setting to

20   the "printing compensation information" is present (=

no charge is necessary), the determination is made that

[Normal printing is possible].

By this determination, in case that it has been

determined that [Normal printing is possible], the

25   process then flows to step S721 to be described later.

Also, by this determination, it has been

determined that a graduation process is necessary for

any item of the printing conditions domain 613 and that the normal printing is not possible, the process then flows to step S708.

Step S708:

5   The copyright information acquisition unit 702 determines whether or not [DO NOT PRINT] has been set to the "flag as to whether or not DO NOT PRINT" within the printing conditions domain 613.

By this determination, in case that [DO NOT PRINT] 10   has been set, the process then flows to step S709.

Also, by this determination, in case that [DO NOT PRINT] has not been set, the process then flows to step S710.

Step S709:

15   The copyright information acquisition unit 702 stops the print processing operation and causes the CRT 229 to display a UI (User Interface) of the effect that [Printing is impossible due to DO NOT PRINT]. And, the process then returns to the step S701 in order to 20   execute the process for the next print data 600.

Step S710:

The copyright information acquisition unit 702 determines whether or not [Resolution restriction] has been set to the "printable resolution range" within the 25   printing conditions domain 613.

By this determination, in case that [Resolution restriction] has not been set for the "printable

resolution range", the process from the next step S711

and step S712 is skipped to flow to the step 713 to be

described later.

By this determination, in case that [Resolution

5   restriction] has been set to the "printable resolution

range", the process then flows to the step S711 to be

described later.

Step S711:

The copyright information acquisition unit 702

10   obtains from the printer driver 310 the resolution

information of the printing set information that is set

by the user in advance.

Step S712:

The copyright information acquisition unit 702

15   compares the value of the resolution information

obtained in the step S711 with the value of the

resolution restriction set to the "printable resolution

range" within the printing conditions domain 613 to

determine whether or not the printing is possible.

20   By this determination, in case that it has been

determined that it is the resolution by which the

printing is impossible, in step S709, the copyright

information acquisition unit 702 stops the print

processing operation to cause the CRT 229 to display

25   the UI of the effect that [Range of printable

resolution of this writing document is xxx dpi to ooo

dpi and please change set of resolution]. And, the

process returns to the step S701 in order to execute
the process for the next print data 600. In addition,
thereafter, also in case that the user has altered the
value of the resolution of the printing set information
by the printer driver 310, the process then returns to
the step S701 to execute the above-mentioned process
again.

Also, by this determination, in case that it has
been determined that it is the resolution by which the
printing is possible, the process then flows to sep
S713.

In addition, when the user sets the printing set
information by the printer driver 310, the printable
resolution of the printer 113 that has been managed in
the printing function information acquisition unit 701
is notified to the user, and the user sets the
resolution by selecting the desirable resolution from
among the notified resolutions. In the case of the
printer 114 and the digital copying machines 115 and
116, it is the same.

Step S713:

The copyright information acquisition unit 702
determines whether or not [Number of printing] has been
set to the "number of printing restriction "within the
printing conditions domain 613.

By this determination, in case that [Number of
printing] has not been set to the "number of printing

restriction", the process from the next step S714 and step S715 is skipped to flow as it is to the step S716 to be described later.

By this determination, in case that [Number of printing] has been set to the "number of printing restriction", the process then flows to the step S714.

Step S714:

The copyright information acquisition unit 702 determines whether or not the value of [Number of printing] set to the "number of printing restriction" within the printing conditions domain 613 is "0". By this determination, in case that [Number of printing] is "0", it recognizes that the printing is impossible.

Also, in case that [Number of printing] is not "0", it determines whether or not the value that is left by the number printed at this time subtracted from the corresponding [Number of printing] is more than "0". By this determination, it recognizes that the printing is impossible in case that the number of the printing restriction is under "0", and recognizes that the printing is possible in case that it is more than "0".

By this determination, in case that it has been recognized that the printing is impossible, in the foregoing step S709, the print processing operation is stopped, and the CRT229 is caused to display the effect that [It is impossible to print due to restriction to

number of printing]. And, the process then returns to
the step S701 in order to execute the process for the
next print data 600. In addition, thereafter, also in
case that the user has altered the printing volume of
the printing conditions by the printer driver 310, the
process then returns to the step S 701 to execute the
foregoing process again.

Also, by this determination, in case that it has
been recognized that the printing is possible, the
process then flows to the step S715.

Step S715:

The value calculated at the time of the
determination in the step S714 is caused to be a new
[Number of printing] to update and set "number of
printing restriction". (In FIG. 11, as an example, the
case is illustrated in which the printing volume of
this time is [1].

Specifically, the calculated value mentioned above
is notified to the application software 308 via the
operating system 301 from the printer manager 305.
And, the application software 308 sets this value to
"number of printing restriction" of the printing
conditions domain 613 of the copyright data 610. In
addition, the operation of the storage of the copyright
data is the same as that of the step S705.

Also, the application software 308 accesses the
URL that has been set in the URL domain 612 to notify

the copyright information management device 704 of the newly-set [Number of printing]. Thereafter, the process then flows to the next step S716.

In addition, the copyright information management device 704 that is notified thereof updates the corresponding copyright information stored in the copyright information storage unit 706.

Step S716:

The copyright information acquisition unit 702 determines whether or not [Compensation information] has been set to "printing compensation information" within the printing conditions domain 613.

By this determination, in case that [Compensation information] has not been set, since the charge to the copyright of the image data 620 does not occur, the process then flows to step S721 to be described later to carry out the print processing of the image data 620.

By this determination, in case that [Compensation information] has been set, the process then flows to step S717.

Step S717:

The copyright information acquisition unit 702 obtains [Compensation information] that has been set to "printing compensation information" within the printing conditions domain 613, and notifies the user of the corresponding compensation, for example, by the

dialogue as shown in FIG. 12 to inquire as to whether the printing is carried out.

Step S718:

The copyright information acquisition unit 702 waits for the event from the user that responds to inquiry into the user in the step S717.

Step S719:

Upon the event of [Yes](Please print: request of the printing commencement) or [No] (No printing) being returned from the user by the dialogue shown in FIG. 12, the copyright information acquisition unit 702 determines whether or not the corresponding event is the request of the printing commencement. By this determination, in case that it is not the request of the printing commencement, in the foregoing step S709, the print processing operation is stopped, and the CRT229 is caused to display the effect that [Printing is stopped]. And, the process then returns to the step S701 in order to execute the process for the next print data 600.

By this determination, in case that it is the request of the printing commencement, namely in case that it is the instruction by the user that he/she carries out the printing by payment of the compensation, the process then flows to step S720.

Step S720:

The process of the charge to the print processing

of the image data 620 is executed.

The charge process herein, for example, is to be the preparation process using the charge table as shown in FIG. 13.

5   In the charge table of FIG. 23, are stored [User name] of the user carrying out the printing and [Charge status] illustrating the charge being billed to the user. In [Charge status], is stored "compensation being set to printing compensation information", for example,

10   money converted into currency such as 13.75 dollars. In addition, in "compensation being set to printing compensation information" is to be stored the value of points by which the print processing is counted, and the points may be converted into money in a currency

15   conversion unit (not shown) responding to the currency unit of each region.

Also, the charge table may include the volume number of the printing, the paper sizes for the printing and so forth.

20   Also, the corresponding charge process is executed so that the charge is billed to the user that now is printing, but the process is not limited thereto, and may be configured so that the charge to each department is possible by preserving the department code and so

25   forth.

In addition, the printing log being prepared as described above is sent to a compensation information

management unit (not shown), summed up or analyzed, and managed. This compensation information management unit may be adapted to be carried out by the operating system 301, or may be adapted to be carried out by the

5   printer manager 305. Alternatively, the printing logs about the various appliances over the network 117 may be collectively managed over a host (not shown) that becomes a charge server over the network 117.

In the present embodiment, as one example, the

10   printer manager 305 is caused to manage the information on the compensation based on the printing logs.

Step S721:

The print processing of the image data 620 is executed in the print processing unit 703. Thereafter,

15   the process returns to the step S701 in order to execute the process for the next print data 600.

In addition, in the present embodiment, the print data (image data) over the host computer 111 (112) are caused to be printed and output, however, as with the

20   print data that are the objects of this printing and outputting, for example, the various kinds of object data are applicable such as the font data, the pattern data and so forth over the host computers 111 and 112, or the printers 113 and 114, or the digital copying

25   machines 115 and 116.

Also, needless to say, the object of the present invention can be also obtained by supplying to the

system or the devices the memory media that stored the

program code of the software realizing the functions of

the host and the terminal of the present embodiment,

and by causing the computers of the system or devices

5   (or the CPU and the MPU) to read out and execute the

program code stored in the memory media.

In this case, the program code itself red out from

the memory media is caused to realize the function of

the present embodiment, and the present invention finds

10   the memory media that stored the program code in the

configuration thereof. As the memory media for

supplying the program code, are employed a ROM, a

floppy disk, a hard disk, a optical disk, an optical

magnetic disk, a CD-ROM, a CD-R, a magnetic tape, a

15   non-volatile memory card and so forth.

Also, needless to say, the case is also included

in which by executing the program code that the

computers red out, the function of the present

embodiment is not only realized, but also the OS and so

20   forth that are working over the computer partially or

wholly execute the actual process based on the

instruction of the program code, thereby enabling the

functions of the present embodiment to be realized.

Furthermore, needless to say, the case is also

25   included in which after the program code red out from

the memory media has been written into the memory being

included in a function extension unit connected to a

function extension board inserted into the computer or the computer, based on the instruction of the program code, the CPU and so forth being included in the function extension board or the function extension unit

5   partially or wholly execute the actual process, thereby enabling the functions of the present embodiment to be realized.

As described above, in accordance with the present invention, by configuring so as to print the

10   corresponding object information based on the copyright information (the information such as the copyright owner's name, the owner's URL, the resolution restriction at the time of printing, acceptance/rejection of the printing, the charge

15   information, the restriction number of the printing and so forth) attached to the object information of the printing (the object data such as the image data and so forth), it can be surely prevented the act such as copying the data dishonestly that have the copyright

20   and so forth, and the copyright of the printing matters can be surely protected.

Also, by configuring so as to obtain the latest copyright information to update the copyright information attached to the object information of the

25   printing (the object data such as the image data and so forth), alteration in the copyright information can be flexibly responded. For example, it becomes possible

to appropriately respond the case and so forth in which
the image data became old works and the charge for them
lowered.